

1

SEQUENCE LISTING

<110> EVANS, RONALD M.

<120> Novel steroid-activated nuclear receptors and uses therefor

<130> SALK2270-2

<140> 09/458,366

<141> 1999-12-09

<150> 09/227,718

<151> 1999-01-08

<160> 09/005,286

<161> 1998-01-09

<170> 48

<190> PatentIn Ver. 2.1

<210> 1

<211> 2068

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (583)..(1884)

<220>

<221> modified_base

<222> (1263)

<223> a, c, t, or g

<400> 1

ggcacgagga gatctagggtt caaattaatg ttgcccttag ttgtaaagga cagagaccct 60

cagactgatg aaatgcgctc agaattactt agacaaagcg gatatttgcc actctcttcc 120

ccttttctctg tgtttttgta gtgaagagac ctgaaagaaa aaagtaggga gaacataatg 180

agaacaaata cggtaatctc ttcatttget agttcaagtg ctggacttgg gacttaggag 240

gggcaatgga gccgcttagt gcctacatct gacttggact gaaatatagg tgagagacaa 300

gattgtctca tatccgggga aatcataacc tatgactagg acgggaagag gaagcactgc 360

ctttacttca gtgggaatct cggcctcagc ctgcaagcca agtggtcaca gtgagaaaag 420

caagagaata agctaatact cctgtcctga acaaggcagc ggctccttgg taaagctact 480

ccttgatcga tcctttgcac cggattgttc aaagtggacc ccaggggaga agtcggagca 540

aagaacttac caccaagcag tccaagaggg ccagaagcaa ac ctg gag gtg aga 594

Met Glu Val Arg

1

ccc aaa gaa agc tgg aac cat gct gac ttt gta cac tgt gag gac aca 642

Pro Lys Glu Ser Trp Asn His Ala Asp Phe Val His Cys Glu Asp Thr

2

5	10	15	20	
gag tct gtt cct gga aag ccc agt gtc aac gca gat gag gaa gtc gga	690			
Glu Ser Val Pro Gly Lys Pro Ser Val Asn Ala Asp Glu Glu Val Gly				
25	30	35		
ggt ccc caa atc tgc cgt gta tgt ggg gac aag gcc act ggc tat cac	738			
Gly Pro Gln Ile Cys Arg Val Cys Gly Asp Lys Ala Thr Gly Tyr His				
40	45	50		
ttc aat gtc atg aca tgt gaa gga tgc aag ggc ttt ttc agg agg gcc	786			
Phe Asn Val Met Thr Cys Glu Gly Cys Lys Gly Phe Phe Arg Arg Ala				
55	60	65		
atg aaa cgc aac gcc cgg ctg agg tgc ccc ttc cgg aag ggc gcc tgc	834			
Met Lys Arg Asn Ala Arg Leu Arg Cys Pro Phe Arg Lys Gly Ala Cys				
70	75	80		
gag atc acc cgg aag acc cgg cga cag tgc cag gcc tgc cgc ctg cgc	882			
Glu Ile Thr Arg Lys Thr Arg Arg Gln Cys Gln Ala Cys Arg Leu Arg				
85	90	95	100	
aag tgc ctg gag agc ggc atg aag aag gag atg atc atg tcc gac gag	930			
Lys Cys Leu Glu Ser Gly Met Lys Lys Glu Met Ile Met Ser Asp Glu				
105	110	115		
gcc gtg gag gag agg cgg gcc ttg atc aag cgg aag aaa agt gaa cgg	978			
Ala Val Glu Glu Arg Arg Ala Leu Ile Lys Arg Lys Lys Ser Glu Arg				
120	125	130		
aca ggg act cag cca ctg gga gtg cag ggg ctg aca gag gag cag cgg	1026			
Thr Gly Thr Gln Pro Leu Gly Val Gln Gly Leu Thr Glu Glu Gln Arg				
135	140	145		
atg atg atc agg gag ctg atg gac gct cag atg aaa acc ttt gac act	1074			
Met Met Ile Arg Glu Leu Met Asp Ala Gln Met Lys Thr Phe Asp Thr				
150	155	160		
acc ttc tcc cat ttc aag aat ttc cgg ctg cca ggg gtg ctt agc agt	1122			
Thr Phe Ser His Phe Lys Asn Phe Arg Leu Pro Gly Val Leu Ser Ser				
165	170	175	180	
ggc tgc gag ttg cca gag tct ctg cag gcc cca tgc agg gaa gaa gct	1170			
Gly Cys Glu Leu Pro Glu Ser Leu Gln Ala Pro Ser Arg Glu Glu Ala				
185	190	195		
gcc aag tgg agc cag gtc cgg aaa gat ctg tgc tct ttg aag gtc tct	1218			
Ala Lys Trp Ser Gln Val Arg Lys Asp Leu Cys Ser Leu Lys Val Ser				
200	205	210		
ctg cag ctg cgg ggg gag gat ggc agt gtc tgg aac tac aaa ccc cca	1266			
Leu Gln Leu Arg Gly Glu Asp Gly Ser Val Trp Asn Tyr Lys Pro Pro				
215	220	225		
gcc gac agt ggc ggg aaa gag atc ttc tcc ctg ctg ccc cac atg gct	1314			
Ala Asp Ser Gly Gly Lys Glu Ile Phe Ser Leu Leu Pro His Met Ala				
230	235	240		
gac atg tca acc tac atg ttc aaa ggc atc atc agc ttt gcc aaa gtc	1362			
Asp Met Ser Thr Tyr Met Phe Lys Gly Ile Ile Ser Phe Ala Lys Val				

3

245	250	255	260	
atc tcc tac ttc	agg gac ttg ccc	atc gag gac cag atc tcc	ctg ctg	1410
Ile Ser Tyr Phe	Arg Asp Leu Pro	Ile Glu Asp Gln Ile Ser	Leu Leu	
	265	270	275	
aag ggg gcc gct ttc	gag ctg tgt caa ctg	aga ttc aac aca	gtg ttc	1458
Lys Gly Ala Ala Phe	Glu Leu Cys Gln	Leu Arg Phe Asn	Thr Val Phe	
	280	285	290	
aac gcg gag act gga	acc tgg gag tgt ggc	cgg ctg tcc tac	tgc ttg	1506
Asn Ala Glu Thr Gly	Thr Trp Glu Cys	Gly Arg Leu Ser	Tyr Cys Leu	
	295	300	305	
gaa gac act gca ggt	ggc ttc cag caa ctt	cta ctg gag ccc	atg ctg	1554
Glu Asp Thr Ala Gly	Gly Phe Gln Gln	Leu Leu Glu Pro	Met Leu	
	310	315	320	
aaa ttc cac tac atg	ctg aag aag ctg cag	ctg cat gag gag	gag tat	1602
Lys Phe His Tyr Met	Leu Lys Lys Leu	Gln Leu His Glu	Glu Glu Tyr	
	325	330	335	340
gtg ctg atg cag gcc	atc tcc ctc ttc tcc	cca gac cgc cca	ggg gtg	1650
Val Leu Met Gln Ala	Ile Ser Leu Phe	Ser Pro Asp Arg	Pro Gly Val	
	345	350	355	
ctg cag cac cgc gtg	gtg gac cag ctg cag	gag caa ttc gcc	att aot	1698
Leu Gln His Arg Val	Val Asp Gln Leu	Gln Glu Gln Phe	Ala Ile Thr	
	360	365	370	
ctg aag tcc tac att	gaa tgc aat cgg ccc	cag cct gct cat	agg ttc	1746
Leu Lys Ser Tyr Ile	Glu Cys Asn Arg	Pro Gln Pro Ala	His Arg Phe	
	375	380	385	
ttg ttc ctg aag atc	atg gct atg ctc acc	gag ctc cgc agc	atc aat	1794
Leu Phe Leu Lys Ile	Met Ala Met Leu	Thr Glu Leu Arg	Ser Ile Asn	
	390	395	400	
gct cag cac acc cag	cgg ctg ctg cgc atc	cag gac ata cac	ccc ttt	1842
Ala Gln His Thr Gln	Arg Leu Leu Arg	Ile Gln Asp Ile	His Pro Phe	
	405	410	415	420
gct acg ccc ctc atg	cag gag ttg ttc ggt	atc aca ggt agc	tga	1887
Ala Thr Pro Leu Met	Gln Glu Leu Phe	Gly Ile Thr Gly	Ser	
	425	430		
gtggctgtcc ttgggtgaca	cctccgagag gtagttagac	ccagagccct ctgagtcgcc		1947
actccccgggc caagacagat	ggacactgcc aagagccgac	aatgccctgc tggcctgtct		2007
ccctaggggaa ttctgtctat	gacagctggc tagcattcct	caggaaggac atgggggtgcc		2067
c				2068

4

<210> 2
 <211> 434
 <212> PRT
 <213> Homo sapiens

<220>
 <221> MOD_RES
 <222> (227)
 <223> Threonine

<400> 2
 Met Glu Val Arg Pro Lys Glu Ser Trp Asn His Ala Asp Phe Val His
 1 5 10 15
 Cys Glu Asp Thr Glu Ser Val Pro Gly Lys Pro Ser Val Asn Ala Asp
 20 25 30
 Glu Glu Val Gly Gly Pro Gln Ile Cys Arg Val Cys Gly Asp Lys Ala
 35 40 45
 Thr Gly Tyr His Phe Asn Val Met Thr Cys Glu Gly Cys Lys Gly Phe
 50 55 60
 Phe Arg Arg Ala Met Lys Arg Asn Ala Arg Leu Arg Cys Pro Phe Arg
 65 70 75 80
 Lys Gly Ala Cys Glu Ile Thr Arg Lys Thr Arg Arg Gln Cys Gln Ala
 85 90 95
 Cys Arg Leu Arg Lys Cys Leu Glu Ser Gly Met Lys Lys Glu Met Ile
 100 105 110
 Met Ser Asp Glu Ala Val Glu Glu Arg Arg Ala Leu Ile Lys Arg Lys
 115 120 125
 Lys Ser Glu Arg Thr Gly Thr Gln Pro Leu Gly Val Gln Gly Leu Thr
 130 135 140
 Glu Glu Gln Arg Met Met Ile Arg Glu Leu Met Asp Ala Gln Met Lys
 145 150 155 160
 Thr Phe Asp Thr Thr Phe Ser His Phe Lys Asn Phe Arg Leu Pro Gly
 165 170 175
 Val Leu Ser Ser Gly Cys Glu Leu Pro Glu Ser Leu Gln Ala Pro Ser
 180 185 190
 Arg Glu Glu Ala Ala Lys Trp Ser Gln Val Arg Lys Asp Leu Cys Ser
 195 200 205
 Leu Lys Val Ser Leu Gln Leu Arg Gly Glu Asp Gly Ser Val Trp Asn
 210 215 220
 Tyr Lys Pro Pro Ala Asp Ser Gly Gly Lys Glu Ile Phe Ser Leu Leu
 225 230 235 240
 Pro His Met Ala Asp Met Ser Thr Tyr Met Phe Lys Gly Ile Ile Ser
 245 250 255

Phe Ala Lys Val Ile Ser Tyr Phe Arg Asp Leu Pro Ile Glu Asp Gln

5

260 265 270
 Ile Ser Leu Leu Lys Gly Ala Ala Phe Glu Leu Cys Gln Leu Arg Phe
 275 280 285
 Asn Thr Val Phe Asn Ala Glu Thr Gly Thr Trp Glu Cys Gly Arg Leu
 290 295 300
 Ser Tyr Cys Leu Glu Asp Thr Ala Gly Gly Phe Gln Gln Leu Leu Leu
 305 310 315 320
 Glu Pro Met Leu Lys Phe His Tyr Met Leu Lys Lys Leu Gln Leu His
 325 330 335
 Glu Glu Glu Tyr Val Leu Met Gln Ala Ile Ser Leu Phe Ser Pro Asp
 340 345 350
 Arg Pro Gly Val Leu Gln His Arg Val Val Asp Gln Leu Gln Glu Gln
 355 360 365
 Phe Ala Ile Thr Leu Lys Ser Tyr Ile Glu Cys Asn Arg Pro Gln Pro
 370 375 380
 Ala His Arg Phe Leu Phe Leu Lys Ile Met Ala Met Leu Thr Glu Leu
 385 390 395 400
 Arg Ser Ile Asn Ala Gln His Thr Gln Arg Leu Leu Arg Ile Gln Asp
 405 410 415
 Ile His Pro Phe Ala Thr Pro Leu Met Gln Glu Leu Phe Gly Ile Thr
 420 425 430

Gly Ser

<210> 3
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Putative SXR
 response element from the steroid hydroxylase,
 rCYP3A1

<400> 3
 tagacagttc atgaagttca tctac

25

<210> 4
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Putative SXR
 response element from the steroid hydroxylase,
 rCYP3A2

<400> 4

6

taagcagttc ataaagttca tctac

25

<210> 5

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
RUGT1A6 .

<400> 5

actgtagttc ataaagttca catgg

25

<210> 6

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
rbCYP2C1

<400> 6

caatcagttc aacagggttc accaat

26

<210> 7

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
rP450R

<400> 7

cacagggtgag ctgaggccag cagcaggtcg aaa

33

<210> 8

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
rCYP2A1

<400> 8

gtgcaggttc aactggaggt caacatg

27

<210> 9

7

<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
rCYP2A2

<400> 9
gtgctgggttc aactggaggt cagtatg

27

<210> 10
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
rCYP2C6

<400> 10
agtctagttc agtgggggtt cagtctt

27

<210> 11
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Putative SXR
response element from the steroid hydroxylase,
hCYP2E1

<400> 11
gagatgggttc aaggaagggt cattaac

27

<210> 12
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Direct repeat
with spacer of 0 nucleotides

<400> 12
catagtcagg tcaaggtcag atcaac

26

<210> 13
<211> 27

8

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 1 nucleotides

<400> 13

catagtcagg tcataggtca gatcaac

27

<210> 14

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 2 nucleotides

<400> 14

catagtcagg tcaataggtc agatcaac

28

<210> 15

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 3 nucleotides

<400> 15

catagtcagg tcatataggt cagatcaac

29

<210> 16

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 4 nucleotides

<400> 16

catagtcagg tcatataagg tcagatcaac

30

<210> 17

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 5 nucleotides

<400> 17
catagtcagg tc tatatag gtcagatcaa c 31

<210> 18
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Direct repeat
with spacer of 6 nucleotides

<400> 18
catagtcagg tcatatataa ggtcaagatc aac 33

<210> 19
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Direct repeat
with spacer of 7 nucleotides

<400> 19
catagtcagg tcatatatat aggtcagatc aac 33

<210> 20
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Direct repeat
with spacer of 10 nucleotides

<400> 20
catagtcagg tcatatatat ataaggtcag atcaac 36

<210> 21
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Direct repeat
with spacer of 15 nucleotides

<400> 21
catagtcagg tcatagtagt agtagtagag gtcagatcaa c 41

<210> 22
<211> 17
<212> DNA

10

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Example of a response element suitable for practice of the invention method

<220>

<221> modified_base

<222> (7)..(11)

<223> This region may encompass 5, 4 or 3 nucleotides, independently selected from a, c, t or g

<400> 22

agttcannnn ntgaact

17

<210> 23

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Example of a response element suitable for practice of the invention method

<220>

<221> modified_base

<222> (7)..(12)

<223> a, c, t or g

<400> 23

tgaactnnnn nnaggtca

18

<210> 24

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 24

tgaactcaaa ggaggtca

18

<210> 25

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Inverted repeat response element with spacer of 0 nucleotides

11

<400> 25
agcttaggtc atgaccta

18

<210> 26
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Inverted
repeat response element with spacer of 1
nucleotides

<400> 26
agcttaggtc agtgaccta

19

<210> 27
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Inverted
repeat response element with spacer of 2
nucleotides

<400> 27
agcttaggtc acgtgaccta

20

<210> 28
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Inverted
repeat response element with spacer of 3
nucleotides

<400> 28
agcttaggtc acagtgcct a

21

<210> 29
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Inverted
repeat response element with spacer of 4
nucleotides

<400> 29
agcttaggtc acatgtgacc ta

22

12

<210> 30
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Inverted
repeat response element with spacer of 5
nucleotides

<400> 30
agcttaggtc acactgtgac cta

23

<210> 31
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Inverted
repeat response element with spacer of 6
nucleotides

<400> 31
agctttgaac tcaaaggagg tca

23

<210> 32
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: IR-M

<400> 32
agcttacgtc atgacgta

18

<210> 33
<211> 33
<212> DNA
<213> Homo sapiens

<400> 33
tagaatatga actcaaagga ggtcagtgag tgg

33

<210> 34
<211> 33
<212> DNA
<213> Homo sapiens

<400> 34
tagaatatga actcaaagga ggtaagcaaa ggg

33

13

<210> 35
<211> 32
<212> DNA
<213> Homo sapiens

<400> 35
tagaatatta actcaatgga ggcagtgagt gg

32

<210> 36
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide for PCR

<400> 36
gagcaattcg ccattactct gaagt

25

<210> 37
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide for PCR

<400> 37
gtccttgggg tcttctacct ttctc

25

<210> 38
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide for PCR

<400> 38
gacgatttgg atctggacat gttgg

25

<210> 39
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide for PCR

<400> 39
tgaacttcat gaact

15

14

<210> 40
<211> 25
<212> DNA
<213> Artificial S quence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 40
gttttcatct gagcgtccat cagct

25

<210> 41
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Illustrative
peptide

<400> 41
Arg Gly Lys Thr Cys Ala
1 5

<210> 42
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 42
tggtcttcat gttct

15

<210> 43
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 43
acaacttcat gaact

15

<210> 44
<211> 15
<212> DNA
<213> Artificial Sequence

<220>

15

<223> Description of Artificial Sequence: Direct repeat
with spacer of 3 nucl otides

<400> 44

aggtcannna ggtca

15

<210> 45

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 4 nucleotides

<400> 45

aggtcannnn aggtca

16

<210> 46

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 5 nucleotides

<400> 46

aggtcannnn naggtca

17

<210> 47

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 3 nucleotides

<400> 47

agttcannnt gaact

15

<210> 48

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Direct repeat
with spacer of 4 nucleotides

<400> 48

agttcannnn tgaact

16